

*Original Research Article*

# Research on Construction Technology and Quality Control of Electromechanical Installation Engineering for Buildings

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**Abstract:** Mechanical and electrical installation is a very important construction technology in construction engineering. From the perspective of the construction unit, whether the installation technology and procedure are scientific and reasonable will have a direct impact on the final quality of the project, and it is also closely related to the personal and property safety of the residents. Based on this, construction organizers should construct and perfect a standardized installation construction quality management system, clarify management regulations, and control key technical points, so as to comprehensively improve the quality of electromechanical installation projects and improve the project qualification rate. This article will describe the construction technology and quality control strategy of electromechanical installation engineering, aiming to lay a theoretical foundation for the improvement of engineering qualification rate and construction quality.

**Keywords:** Building Engineering; Electromechanical Installation; Construction Quality

The construction and use of building engineering have a close and inseparable relationship with people's production and life. The safety level and construction quality of buildings need to be paid attention to, while the construction technology and quality control of building electromechanical installation projects depend more on a sound management system. Electromechanical installation engineering involves equipment installation and maintenance, installation and debugging of electricity system and water supply and drainage system of buildings. Therefore, the electromechanical installation engineering directly affects the use experience of building users. Electromechanical installation engineering for buildings with high quality and high technical content can reduce the disputes caused after the completion of the building and improve the cultural reputation of the construction enterprises. Therefore, under

the increasingly fierce market competition in the construction market, it is of great value and development significance to carry out systematic research on the electromechanical installation engineering for buildings.

## 1. Importance of technology management and quality control

At present, in the process of electromechanical installation and construction, enterprises need effective application of quality control for technical management, which can promote the development of the overall economy and effectively influence its safety level through electromechanical installation quality control. In the process of modern electromechanical installation, the technical management of construction enterprises can effectively increase the economic benefits and improve

the level of technical personnel of enterprises. At the same time, through the overall improvement of management contents in different degrees, the development of the whole enterprise can be more guaranteed, and the quality control can be strengthened. However, it is necessary to combine the two terms of technical management and quality control, so as to highlight the installation of modern machinery and equipment. In the process of mechanical and electrical installation, technical management and quality management directly affect the overall development and competitiveness of enterprises. Modern mechanical installation must recognize the role of management, give full play to the functions of management, strengthen the effective implementation of overall quality, adjust the actual work content according to the actual situation, and promote the improvement of the management level of enterprises themselves.

## **2. The characteristics of electro-mechanical installation engineering for buildings**

### **2.1 Wide range**

All the construction projects put into use need to be installed according to the humanized use. It can be said that the buildings with no electromechanical installation are useless. Therefore, no matter how the building is used, it is necessary to constantly improve the use of the building through the electromechanical installation engineering. Because there are many ways to use buildings, the scope of electromechanical installation works of corresponding buildings is also very wide. From the design and construction of residential buildings, municipal works such as the construction of bridges and roads, to libraries, production workshops of factories, the electromechanical installation is required.

### **2.2 Many specialties involved**

Mechanical and electrical installation engineering is a separate but coordinated whole, which requires technical engineers from different professions to run in and cooperate with each other. The improvement of different building systems can improve the overall quality of buildings. For example, during the construction of residential buildings, it is necessary to continuously install and debug the electricity system, water supply and drainage system and air filtration system. The installation

and debugging of power system require welding and testing by professionals, and the use of water supply and drainage system functions requires the construction personnel to have professional theoretical knowledge and rich construction experience. It can be seen that there are not only many majors in the design of electromechanical installation engineering for buildings, but also complicated ones.

### **2.3 Oneness**

Every electromechanical installation project is unitary, in order to make different electromechanical installation projects play a harmonious control role in the same building. It is necessary to constantly adjust the design scheme and construction scheme of the building. In the process of building construction, the construction scheme needs to be changed and adjusted in time according to the topography, climate of the construction site and the different requirements of the building users. The oneness of electromechanical installation works is unchanged for the overall purpose of improving the building quality.

### **2.4 Heavy workload**

Because of the wide range and many specialties involved in electromechanical installation engineering for buildings, there is heavy workload. The completion of the electromechanical installation project often requires a large number of operators of different professions to carry out installation, construction and debugging. In the process of studying building construction cases, there is often a phenomenon of cheating on workmanship and materials and changing building construction schemes without authorization in order to reduce building workload. Therefore, in the process of electromechanical installation, the workload of management and subsequent debugging is also very heavy.

## **3. The construction technology of electromechanical engineering for buildings**

### **3.1 Installation of mechanical equipment**

Mechanical equipment involved in electromechanical engineering for buildings can be divided into common use and specialty, and also divided into single machine and production. In the actual installation process,

the whole installation or disassembly installation can be used. Both installation methods need to take the whole installation into account. Before installation, it is necessary to check whether the equipment is safe and meets the standards. In order to ensure the construction safety, it is necessary to do experimental tests on the performance, installation type and positioning reference line of the equipment, which can be put into use only after they are tested to be precise. In addition, mechanical equipment needs to be cleaned regularly, rustproof and oiled in time to ensure good service performance.

### **3.2 Installation of ventilation system**

Ventilation system is the key and difficult point in electromechanical installation engineering. This technology mainly involves the installation of air duct, exhaust and dust removal system. Its main function is ventilation and dust removal, which is of great significance in construction engineering. For the installation of air duct, it is necessary to investigate according to the geographical location of installation, and choosing the appropriate installation location can bring convenience to the subsequent construction. After selecting a proper location, it needs to be designed and installed according to the design scheme. Dust removal is required before installation to prevent too much dust from affecting the installation effect.

### **3.3 Installation of electrical engineering**

There are many equipment involved in the installation of electromechanical engineering for buildings, of which electrical installation is one. The installation of electrical engineering mainly includes lighting system, electrical equipment, switches, sockets, and electrical appliances. The installation positions are reserved in advance according to the design drawings, and then the line slots are arranged to lay the foundation for the subsequent construction. After the whole installation is completed, the system needs to be debugged to ensure that it is correct before acceptance, so as to ensure the safe and stable operation of the system. In addition, many basic materials need to be used in this process, and enterprises need to strictly check and accept the quality of these materials.

## **4. The quality control of electromechanical engineering**

### **4.1 Study drawings and strengthen the management of construction personnel**

In order to ensure the normal and orderly implementation of electromechanical installation project, it is necessary for each department to carefully study and plan the installation drawings and construction standards and regulations before formal installation. According to the actual on-site construction, the construction scheme is reasonably arranged to provide the basis for the installation process, and a strict quality management system is formulated. The main factor for the quality of electromechanical installation lies in people. Many installation workers are not aware of safety and have no sense of responsibility, which leads to serious potential safety hazards. Therefore, enterprises need to train the construction and management personnel of various departments, especially the training of professional skills. Before taking up their posts, they need to check whether they have relevant certificates, and conduct regular technical inspection and qualification examination.

### **4.2 Strengthen the management of construction stage**

The construction stage of electromechanical engineering is the key stage of quality control. As the quality will be affected by many external factors, such as technology, weather and management system. The quality should be strictly controlled during the construction of building electromechanical engineering, and the unit should also organize professional construction teams to dock the construction site and supervision work, and regularly check the construction safety and quality. Problems encountered during the inspection should be reported at regular meetings and measures should be taken to solve them. The quality management team of electromechanical engineering should also carefully review the design work of construction organization, and organize special meetings to discuss the processes and technologies used in the construction process to ensure the smooth progress of the project. At the same time, it is also necessary to strengthen the supervision of construction projects, and implement an assessment system for supervision units to ensure the comprehensive quality of supervision teams, and require managers to report the actual situation of construction projects from time to time. In addition, the materials and equipment used in the

construction project should be examined, and the equipment can be put into use in a large area only after it is confirmed to be qualified.

#### **4.3 Strengthen the cultivation of construction teams**

Because the management of mechanical and electrical engineering is professional and involves a wide range, the comprehensive quality of the staff is required. As managers, they should be familiar with the design structure, construction technology, equipment procurement and other aspects. At the same time, the rationality of construction management is also closely related to the working attitude and comprehensive professional level of the staff. Therefore, enterprises also need to strengthen the training of the staff, broaden the knowledge range of the staff, improve the comprehensive quality of the staff, and finally establish a management team with higher comprehensive quality. Companies can also set up a reasonable reward and punishment system. Only in this way can the staff's work enthusiasm be motivated and the quality of the staff be ensured. Because the site management of electromechanical engineering involves funds, the staff should always understand the heavy responsibilities, and have good moral qualities through moral education, thus avoiding some illegal acts.

#### **4.4 Define quality objectives and improve the quality assurance system**

In order to ensure the quality of electromechanical installation, it is necessary to define objectives, establish relevant supervision mechanisms, supervise the whole process of electromechanical installation, and arrange relevant personnel to record the actual installation site, regularly check the equipment, and make a good registration. It is conducive to finding defects in the electromechanical installation process and correcting them in time, so as to effectively reduce the occurrence of safety accidents. The quality assurance system involves construction personnel, management personnel, installation personnel, material management personnel, process inspectors, etc. of electromechanical installation project. By determining the responsibility system, the above personnel are urged to carry out reasonable, efficient and safe construction, so as to make the construction order of electromechanical installation clearer and improve the construction quality.

#### **4.5 Strengthen the commissioning and acceptance of the project**

Any link in the electromechanical installation project should not be careless. Debugging and acceptance links affect the overall quality of the project and whether the installation meets the needs of residents. So, it needs to be strictly controlled. Enterprises should arrange professionals to debug the system and solve the problems in the debugging process in time. A special unit applies for the acceptance process, which includes construction drawings, and engineering quality. The quality of the project is mainly judged according to relevant quality errors. If the deviation is large, rework or reinstallation is required, which will increase the construction cost of the enterprise. Therefore, enterprises need to control the construction of electromechanical installation engineering in the whole process to reduce errors and enhance enterprise benefits.

### **5. Conclusion**

To sum up, the construction technology and quality in electromechanical engineering for buildings can determine whether the whole project can pass the acceptance and meet people's needs. Construction personnel should pay more attention to the construction quality management, and only in this way can the economic benefits of the project be improved. In practice, management personnel should improve their professional level, study professional and technical knowledge hard, and solve the existing problems. The person in charge of the construction project should pay attention to the quality and safety of the construction project, and improve the management system of the construction project to make the quality management work more scientific and standardized.

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